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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,991	11/01/2000	Edward L. Schwartz	074451.P042X2	7119

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EXAMINER	
WU, JINGGE	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/704,991	SCHWARTZ ET AL.	
	Examiner	Art Unit	
	Jingge Wu	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,34-40,48-52 and 80-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-6, 34-40,48-52 and 80-85* is/are rejected.

7)☐ Claim(s) *86* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5-7 12 14 17*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to amendment

Applicant's response to the previous Office Action filed on April 22, 2004 has been entered and made of record.

In view of the Petition Decision rendered on September 16, 2004 and Applicant's argument, the rejections based on GB 2341035 to Schwarz et al. are all expressly withdrawn.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with

37 CFR 3.73(b). Applicant is urged to file terminal disclaimer in order to avoid the delay of allowance of the applicantion.

Claims 1-6, 34, 48, and 80 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, and 8 of U.S. Patent No. 5,966,465 to Keith et al. in view of US 6229927 to Schwartz.

Claims 1, 8, and 31 of U.S. Patent No. 5,966,465 has taught every element, e.g. wavelet, context model, entropy encoder etc. but does not specifically mention coding the important data without buffering and determining the average codeword length.

Schwartz, in an analogous environment, discloses sending the most important data immediately to a context model for coding... storing less important data for coding after the most important data (col. 23 lines 34+) and determining the average codeword length (col. 41, line 31+).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Schwartz in the method of Keith in order to increase coding efficiency and reduce the memory needed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 48-49, 80-81 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Efficient context-based entropy coding for lossy wavelet image compression" to Chrysafis et al. in view of US 5471207 to Zandi et al.

As to claim 48, Chrysafis. discloses a system comprising:

a context model (fig. 1);

a probability estimation machine (probabilistic model) coupled to the context model (page 243-244 section 2) and a bit generator (predictor, equation 2) coupled to the probability estimation machine (page 243 section 2.1); and

an encoder (entropy coder) rate control (rate distortion criterion)coupled to an output of the bit generator to control the encoding rate (page 246-247, section 3).

Chrysafis does not explicitly mention determining average codeword length which is implied if using optimal entropy encoding.

Zandi , in an analogous environment, mention the feature (col. 8, lines 59-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Zandi in the system of Chrysafis include in order to perform faster compression and reduce memory needed (Zandi, abstract).

As to claims 49, Chrysafis further discloses an encoder rate control adjusting quantization (page 246-247, section 3, see step 5).

As to claims 80-81, the claims are the corresponding system (means plus function) claims to claims 48-49. the discussions are addressed with regard to claims 48-49.

As to claim 85, Chrysafis further discloses encoder coding the bit planes (bands) of wavelet transformed pixels and storing them (page 246-247, section 3).

Claims 50-52 and 82-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Chrysafis and Zandi and Zandi, further in view of US 5762343 to Haruma et al..

As to claims 50-52, the combination of Chrysafis does not explicitly mention the headers for indicating quantization level data for decoder that is well known in the art.

Haruma, in an analogous environment, mention using header bit to indicate the quantization level data for each macroblock (col. 6, lines 29-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Haruma in the system of Chrysafis for indicating each bands to have different quantization levels in order to perform accurate inverse quantization for better image quality (Haruma, col. 1).

As to claim 82-84, all the limitations are addressed with regard to claim 50-52.

Claims 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysafis.

As to claim 34, Chrysafis discloses a system comprising:

a pixel data interface to transfer pixel data between the system and memory (page 246-247, inherent to having an interface);

a reversible wavelet transform unit (page 246, see step 1) having an input coupled to the buffer to perform a reversible wavelet transform on the pixels stored in the buffer and to generate coefficients at an output via the interface(page 246-247, section 3);

context model coupled to the reversible wavelet transform to provide context for coding the data provided therefrom (fig.1, page 242-246, section 2); and

an encoder to encode coefficients generated by the wavelet transform based on context provided by the context model (page 246-247, section 3).

Chrysafis does not mention an integrated chip (IC).

However, embedding the algorithms disclosed by Chrysafis in an IC is a obvious design choice.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design an IC for the algorithms and system of Chrysafis in order to increase the processing speed of the image processing.

As to claims 35-39, Chrysafis further discloses transfer the coefficients to memory coding and without coding (page 246-247, section 3), storing coded data into memory (page 246, inherent to storing the coded data for one subbands, then coding another), a decoder for decoding the encoded data, page 246, and abstract, note that decoding is inherently converse process).

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysafis in view of US 6865291 to Zador.

As to claim 40, Chrysafis does not mention using reversible wavelet transform to perfom reversible color space conversion.

Zador, in an analogous environment, teaches using wavelet transform to convert color space (col. 30, lines 32-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Zador in the system of Chrysafis in order to reduce the artifact with image compression (ZAdor, col. 2).

Allowable Subject Matter

Claim 86 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-6 would be allowable if Applicant overcomes the double patenting rejection, set forth in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (571) 272-7429. He can normally be reached Monday through Thursday from 8:00 am to 4:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (571) 272-2600.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (571) 272-7414.

The Working Group Fax number is (703) 872-9306.

Jingge Wu

Primary Patent Examiner